EXHIBIT C

XML Based Bridging

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XML

XML = eXtensible Markup Language

Similar to other Markup Languages such as GML, SGML, HTML etc.

Key difference is the tag definitions

- DTD defines data schema/tag meanings
- Rendering engines use the DTD to interpret and display the XML data stream
- Approach allows XML representation of very complex data schema

There is a growing industry toolbase for the manipulation of XML data streams

- Rendering engines, Parsers
- Manipulators, mappers, conversion tools

There is an industry move toward XML as an application data interchange format

XML Bridging Technology History

- BankOne requirement is identified for trouble ticket bridging between the IBM managed Customer Service Center's Tivoli Service Desk system and AT&T Network Service Center GEMs system

- Solution Design/Development Proceeds

- XML Based Trouble Ticket Bridging Solution Delivered

- work begins on a generic XML Bridging Solution for use between additional systems and to enable bridging of additional system management data types to:

- Facilitate additional service partnerships
- Facilitate management system migrations

BankOne Trouble Ticket Bridge Solution

Bi-directional Ticket Transfer between AT&T and IBM

Informational Tickets

- Tickets are reflected on target system for informational purposes
- Changes to tickets on the source system are reflected on target system
- No Informational Tickets to go from IBM to AT&T per current requirement

Ticket Referrals

- Tickets are assigned to the target system for resolution
- The source system is updated with changes made on the target system
- The source ticket is R/O
- No Ticket Referrals from AT&T to IBM per current requirement
- Ticket Referrals to AT&T are initiated by ticket assignment to AT&T Resolver Group in TSD

BankOne Trouble Ticket Bridge Solution (cont'd)

Bridge between Tivoli Service Desk and AT&T GEMs

- Trouble Ticket Bridging
- Resulted in definition of a TSD Interface for XML Based Bridging
- Utilizes Existing AT&T GEMs Interface

Serves as a Prototype for a Generic XML Based Bridging Solution

Generic XML Based Data Bridge

Bridge Enhancements

- Capability to Bridge Multiple Data Types
  - Change, Problem, Asset, Others
- Field Ownership to Support R/W Tickets on Multiple Systems
- Improved Logging and Statistics
  - Loading/Throughput/Performance
  - Transaction Turnaround Times
  - Support SLA Measurements
- Alert Instrumentation
  - Enhance current alert exit to operate in standard eESM environment
- More than two Sources/Destinations
  - One to Many
  - Many to Many

Generic XML Based Data Bridge (Cont'd)

Common Access Interface to Bridge Component

- HTTP Based Communications
- Defined Verb Set (Read, Create, Update, Acknowledge, etc.)

Gateway Developer's Kit

- Skeleton Gateway
- Bridge Component Access Classes

Generic XML Gateway for TSD Component

- Provides Support for Problems
- Target 90%-100% compatibility with accounts that require TSD bridge
- Provide System Test configuration

Visual Ruleset Editor

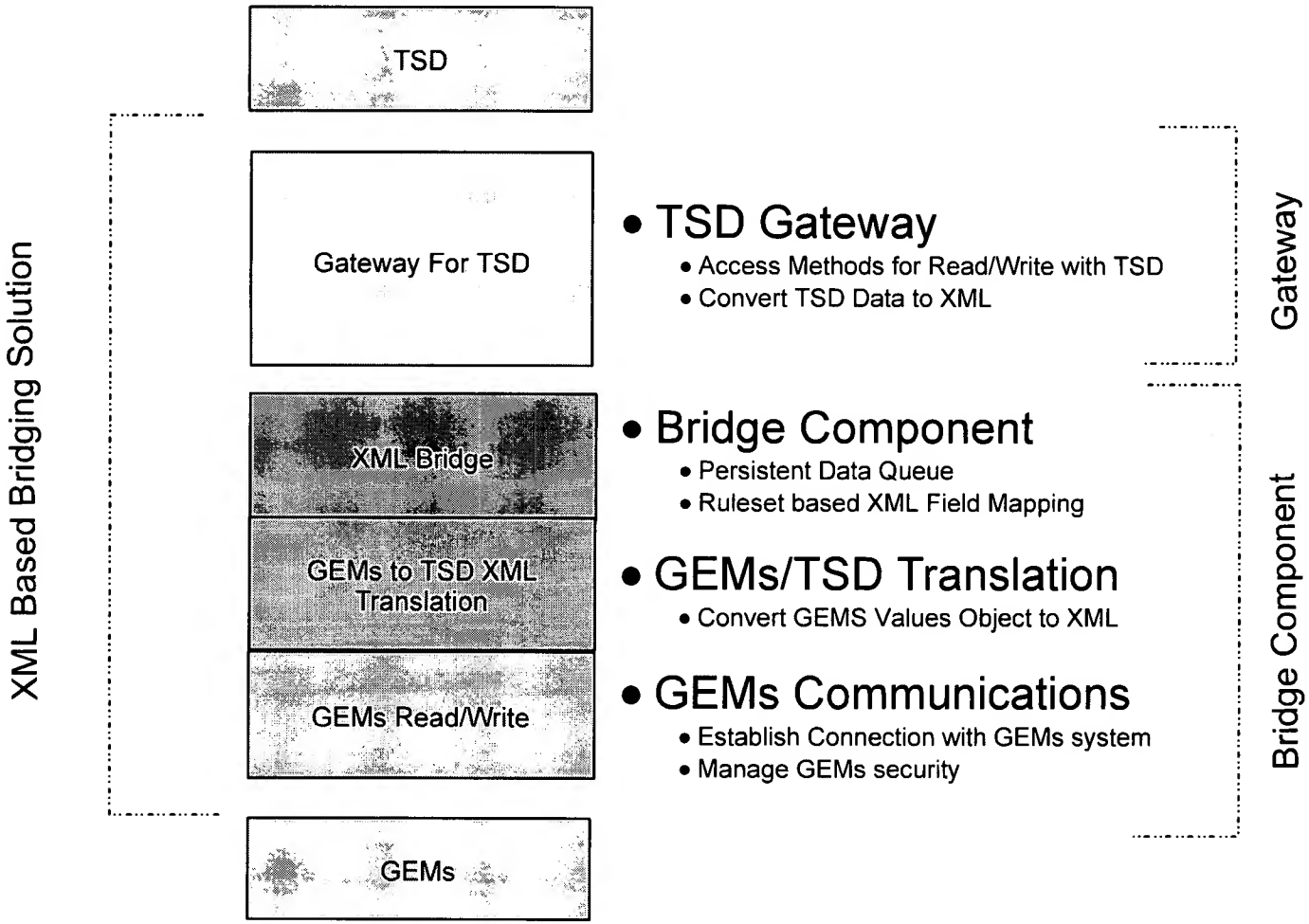
Bridging Solution Components Currently Under Development

Extension of XML Problem Bridge provided in Bank One account environment

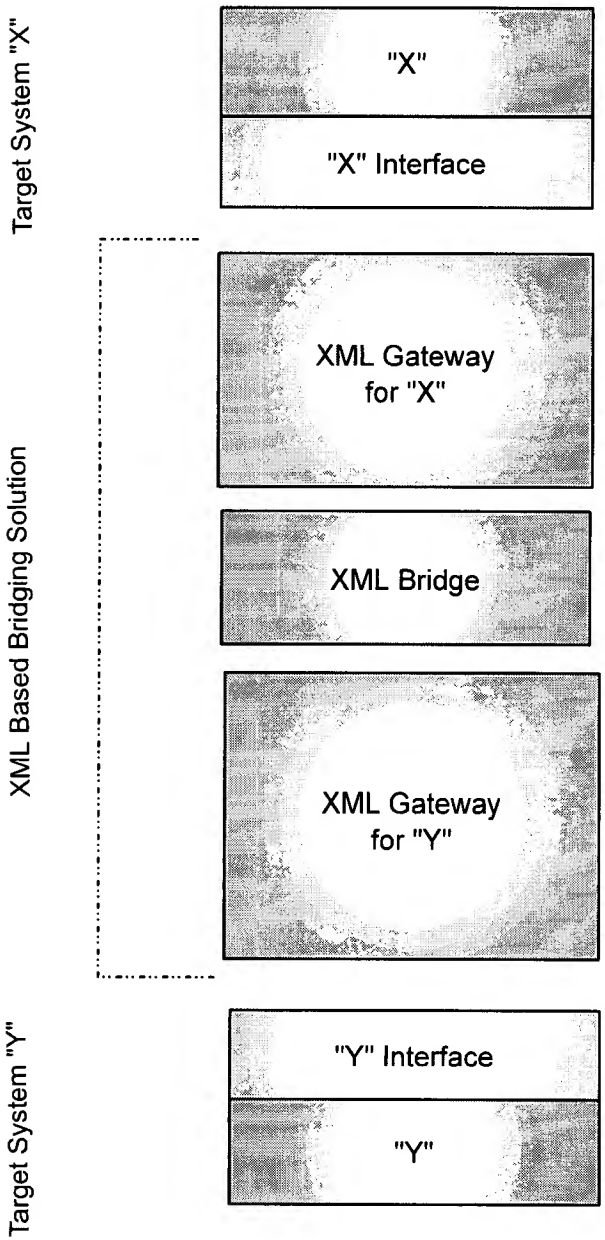
- Generic XML Based Bridge
- Generic XML Gateway for Tivoli Service Desk (TSD) Problem
- Visual XML Mapping Ruleset Editor
- Gateway Software Development Kit (SDK)

Logical Architecture - TSD/GEMs

BankOne Trouble Ticket Bridge
(TSD - GEMs Specific)



Logical Architecture - Generic



- **Target System Interface**
  - System Specific and May be:
    - Native API
    - Direct DB Access
- **Gateway**
  - Access Methods for Read/Write with system "X"
  - Convert System "X" Data to XML as required
  - Communication with Bridge using Standard Class
- **Bridge Component**
  - Persistent Data Queue
  - Ruleset based XML Field Mapping
- **Gateway**
  - Access Methods for Read/Write with system "Y"
  - Convert System "Y" Data to XML as required
  - Communication with Bridge using Standard Class

Bridge Component Detail

Persistent Data Queue

- High reliability
  - RAID DASD
  - Positive acknowledgment based operations
  - Retry logic with configurable time-outs and retry counts

Defined Gateway Interface with operational verb-set (Create, Update, Read, Acknowledge)

XML Data Stream for Input and Output

Ruleset Based Mapping

- Based on IBM Research PATML technology

Implemented as a JAVA Servlet

Gateway Component Detail

Provides access methods for the Target System

- Read/Write

Converts native read results to XML for outbound operations

Converts XML to native writes for inbound operations

Communicates with the bridge component via defined bridge interface methods

Implemented as a Java Servlet

Data Mapping

Field to Field

- Bridge Component Function
- Field to Field with adjustment for data field lengths and types

Semantic

- Typical Bridge Component Function
- Field Translation from source system value to the corresponding target system value (e.g. Priority A on Source System corresponds to Priority 1 on Target System)

Business Logic

- Bridge or Gateway Component Function (Bridge Preferred)
- Field manipulations based on other fields and predefined business logic (e.g. Set proper fields to reopen a problem when certain conditions are met)

XML Ruleset Mapping Editor

Visual Mapping Editor

- Reduce skill set required to create mapping rules
- Rules specified in pseudo-code fragments
  - If/Then/Else
  - Table Lookup
- Source and Target DTDs presented for rule references

Gateway Developer's Considerations

Interface with Bridge

- Base development on IBM Global Services Provided Development Kit
- Utilize Bridge Component Communications Classes
- Define XML Data Model and Corresponding DTD

Interface with Target System

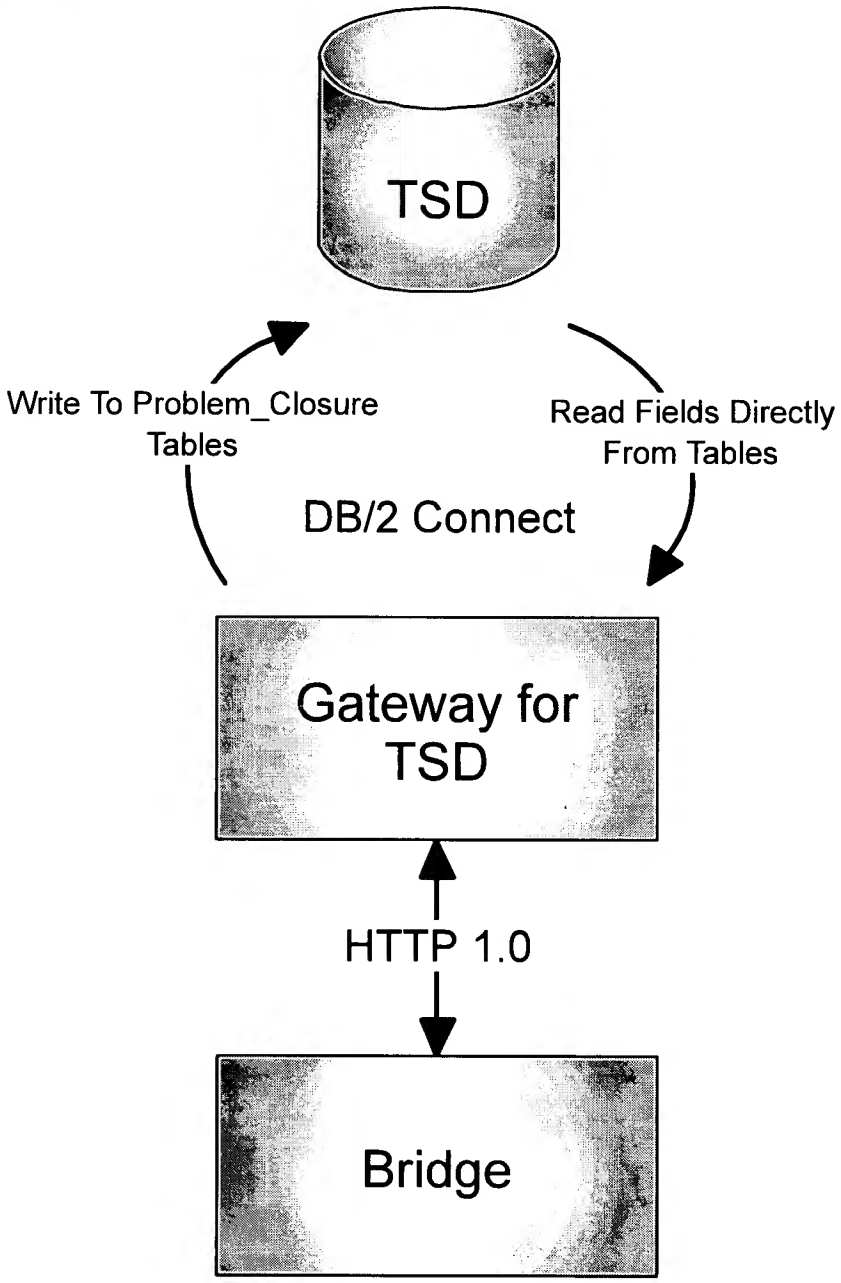
- Target System Interface to Support Required Actions (e.g. Read, Create, Update, Acknowledge) in order of preference:
  - System provided API to access its functions
  - Combined use of system API and direct access to target system database
  - Directly access the target system database
    - Access method (e.g. ODBC/JDBC)
- Provide Ability to Scale to Multiple Gateway Servers if High Load is Anticipated
- Target System Locking
- Target System Data Integrity and Consistency

Gateway Software Development Kit

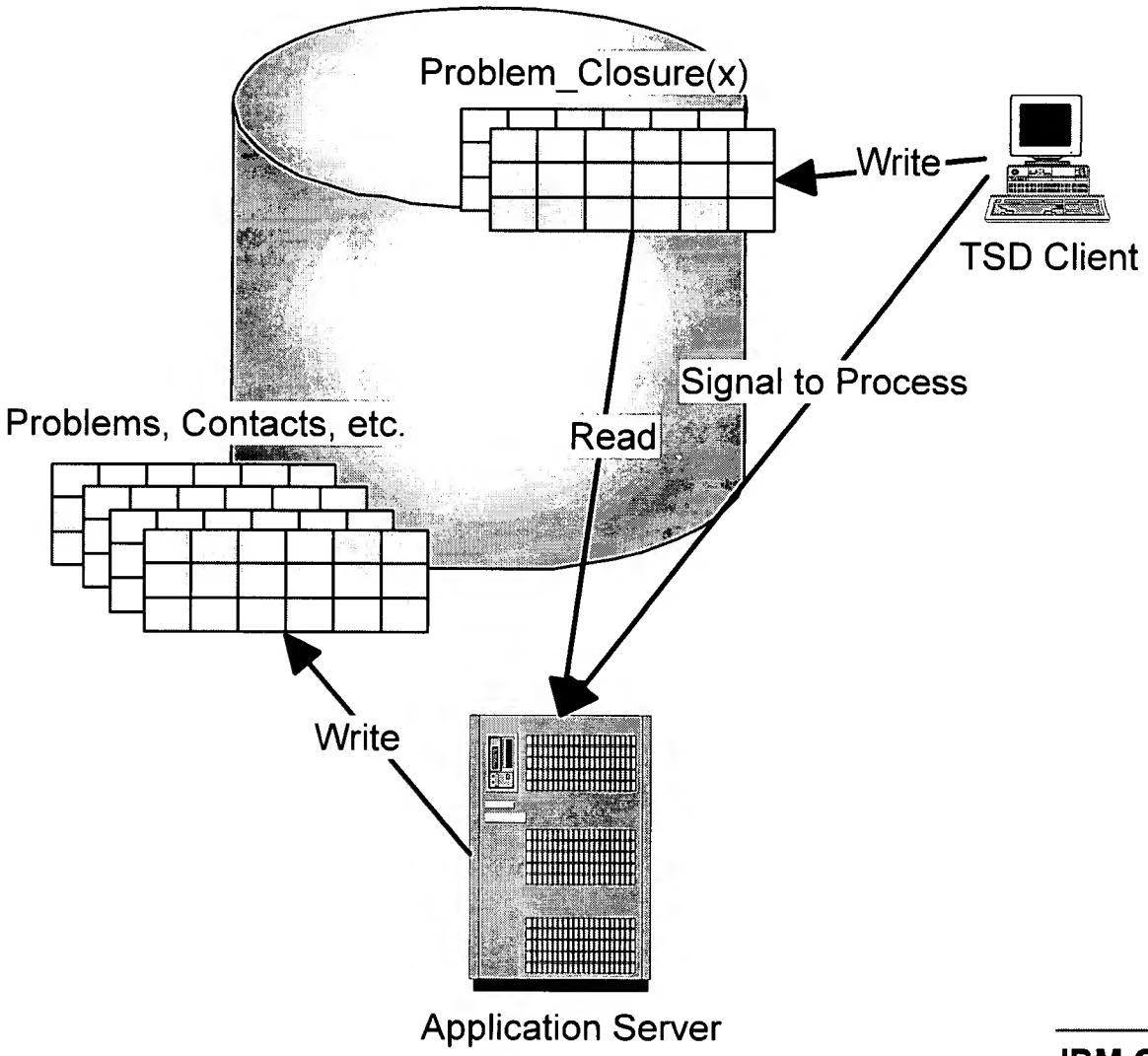
Gateway Software Development Kit

- Bridge communications Classes
- Base Gateway Class
- Source Code Skeleton of Gateway
  - Examples of provided class use
  - Examples of XML data transforms
- Documentation
  - Bridge API
  - Classes and Methods
  - Overview of GW Development activity

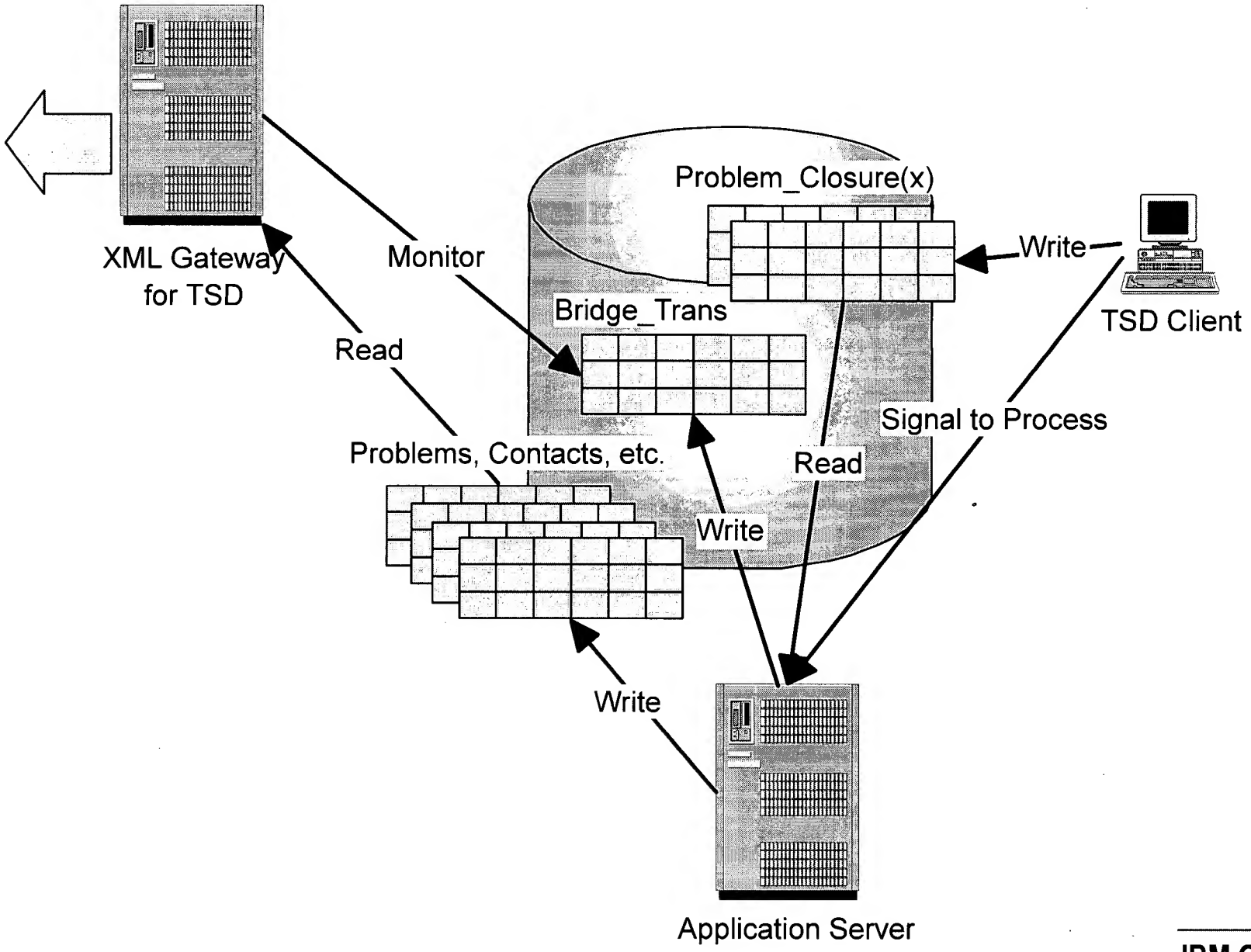
Bridge - Gateway - TSD Communications



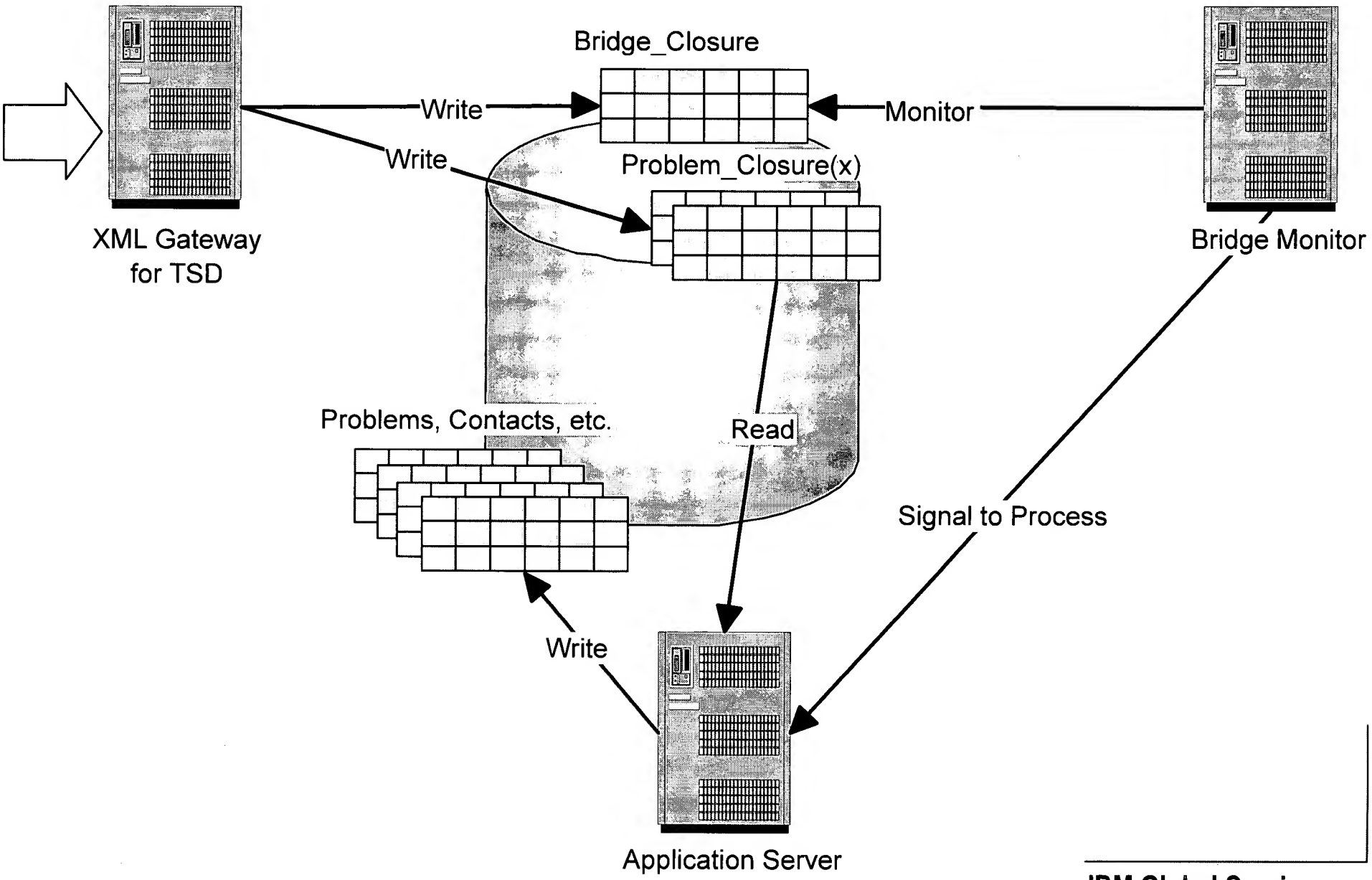
TSD Interface - Native Client



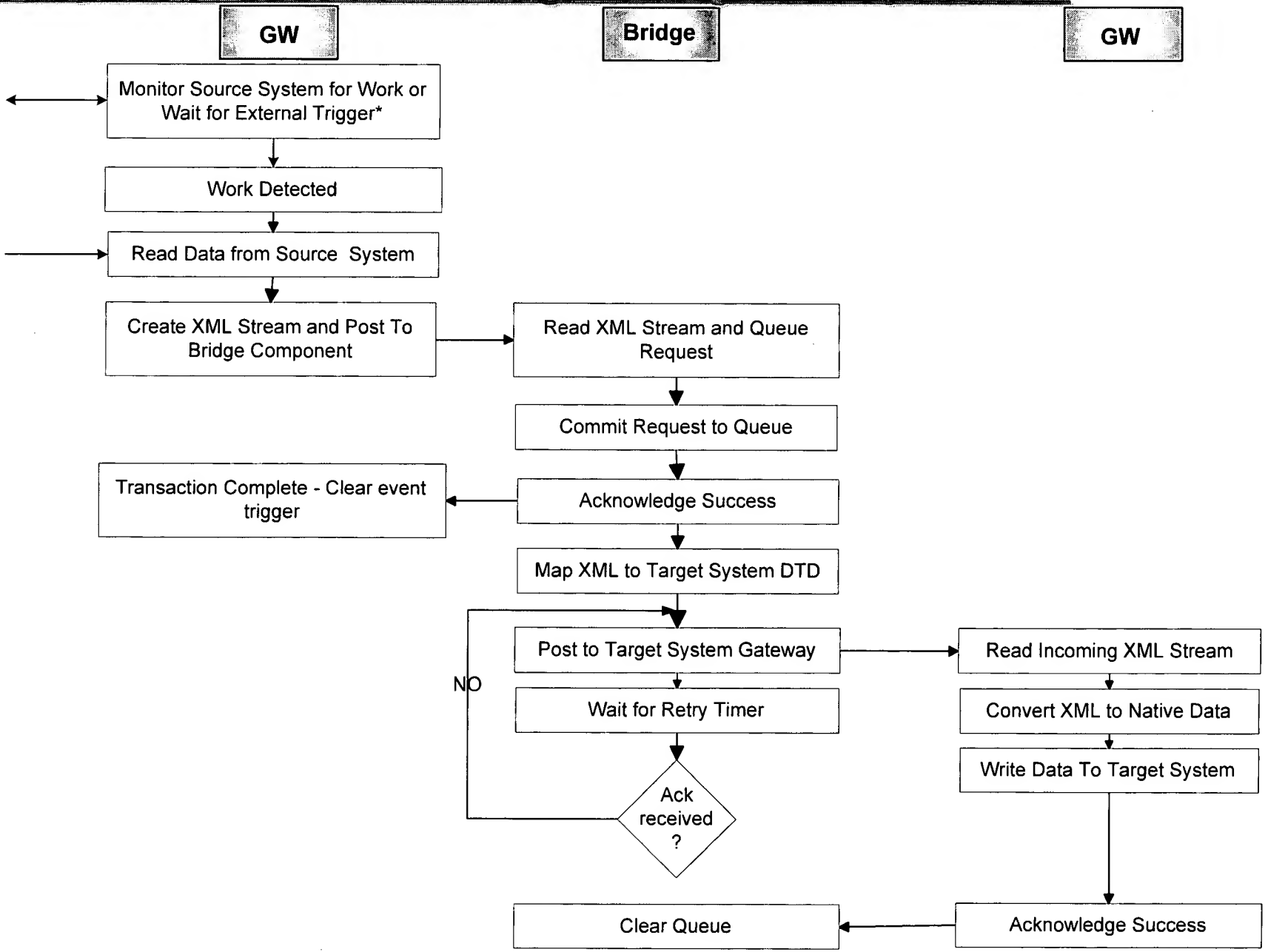
TSD Interface - Outgoing Bridged Tickets



TSD Interface - Incoming Bridged Tickets



Sample Data Flow Through Bridge Components



Software

Microsoft Windows NT Server

Microsoft Internet Information Server (IIS Web Server)

IBM Websphere

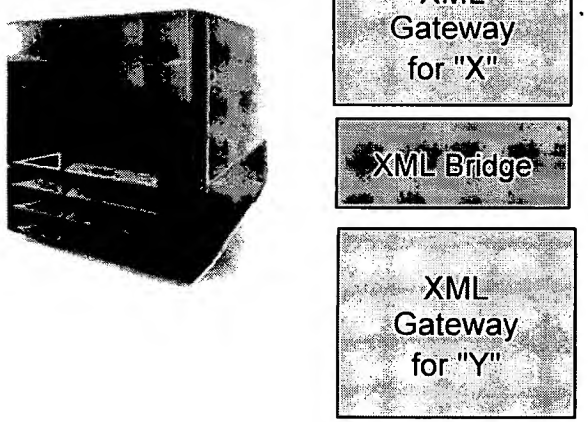
Target System Access Software (as Required)

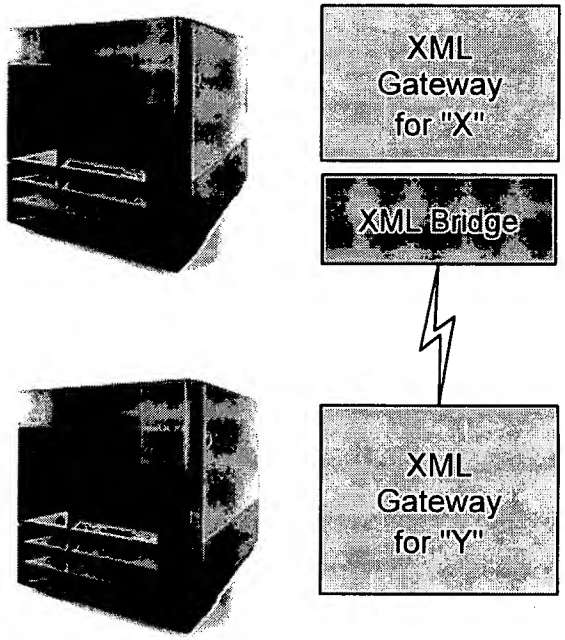
- e.g. DB/2 Connect (JDBC)

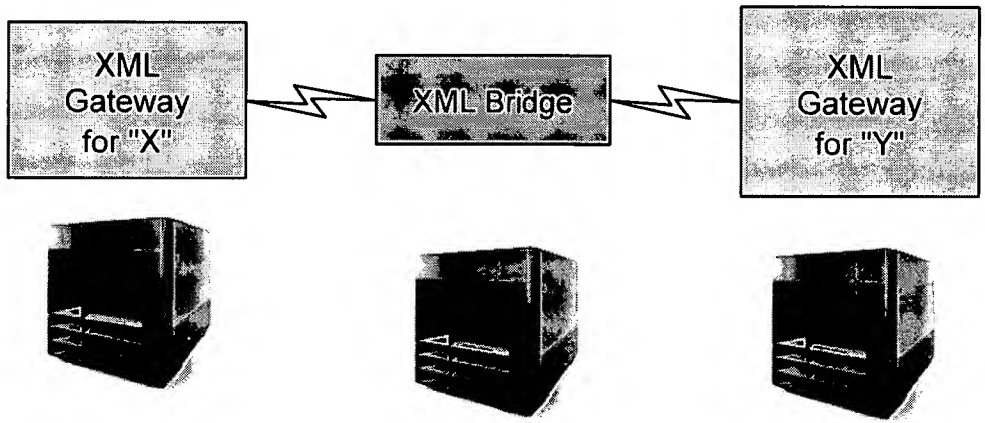
XML Based Bridging Solution

- JAVA Servlets (Gateways, Bridge Component)
- Compiled Mapping Ruleset

Physical Configuration Options







Physical Configuration Options

Each Component (Servlet) of the solution can be run on its own processor.

- Allows rudimentary scaling of the solution as load increases
- Allows management of connectivity requirements
- Allows geographic distribution of components

Multiple Instances of the bridging solution can be deployed in parallel

- Additional scaling

Future Considerations

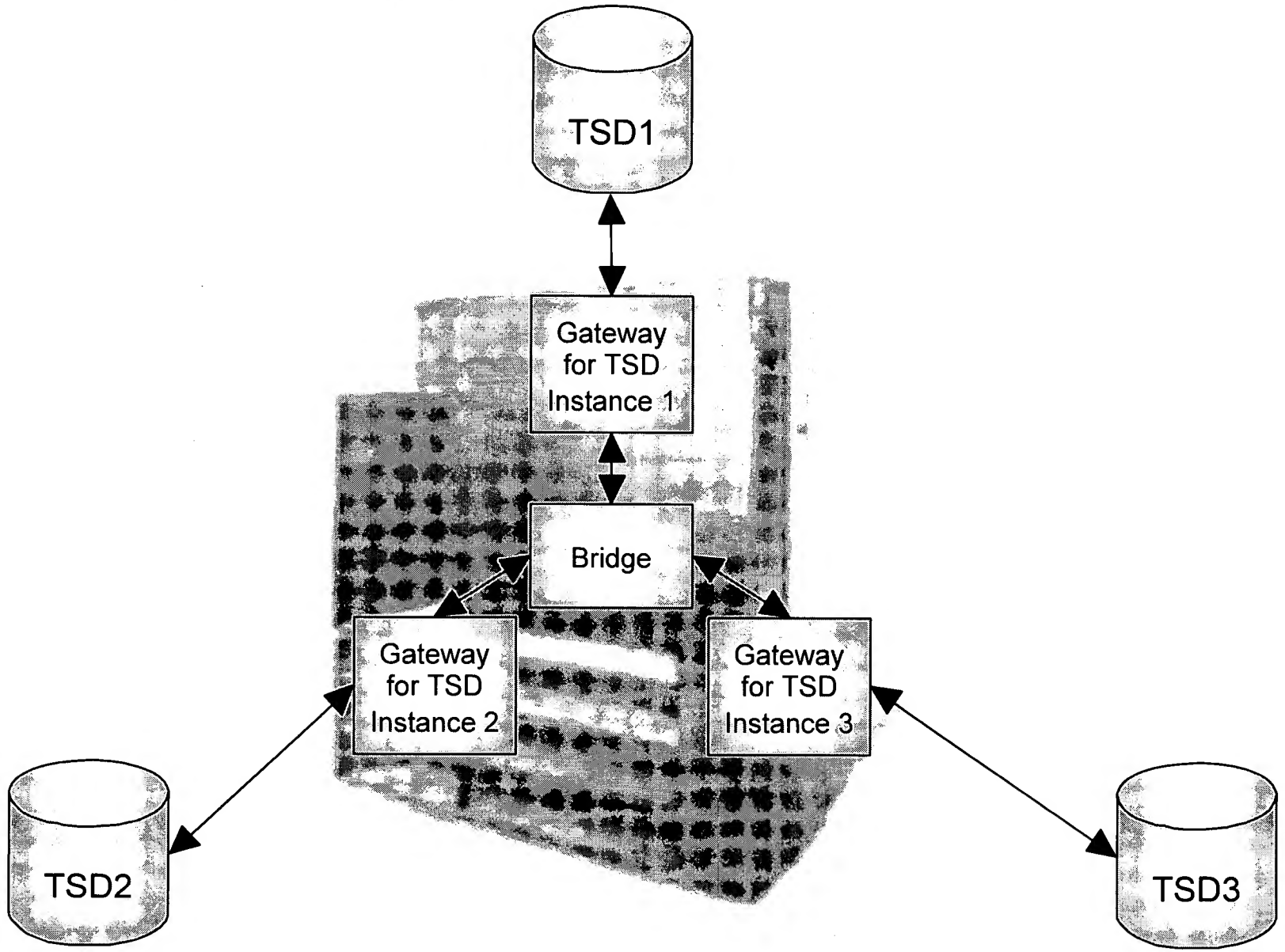
Definition of a base system management XML data schema

- Industry standardization
- Enabler for simplified integration of vendor products
- Enabler for simplified partnering

Analysis of B2B initiatives and XML Bridging Technology's role

Backup

System Test Infrastructure



System Test Scenario Development

Test DTDs

Test Mapping Ruleset

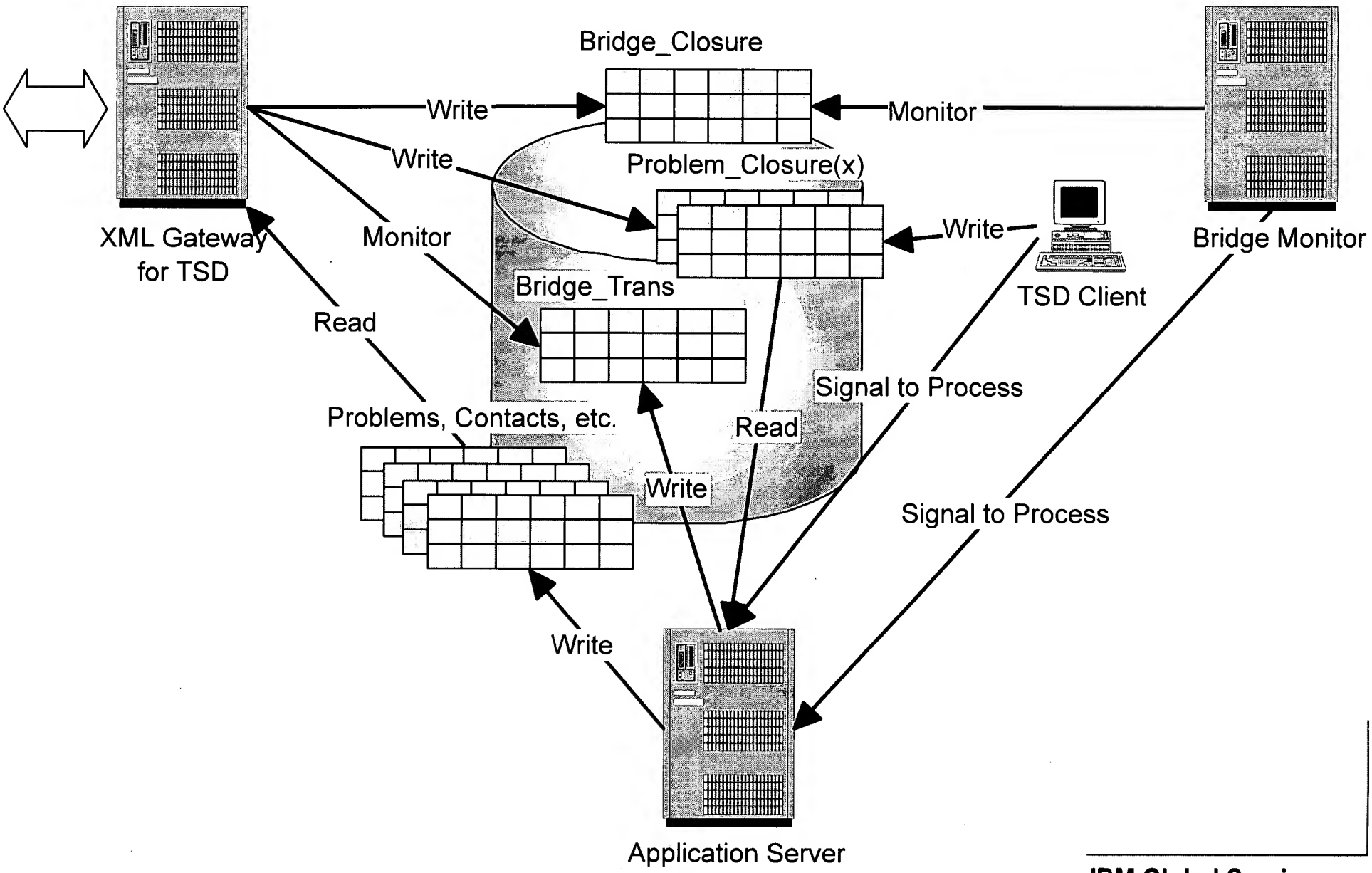
- One to One
- One to Many
- Many to Many

Problem Ticket Scenarios

Multi-customer Support Scenarios

- Exploit prefixed views based shared environment

TSD Interface Details



TSD Database - Bridge Related Tables